

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A radiation sensitive resin composition which is capable of forming a positive pattern resin film which comprises (A) an alicyclic olefin resin soluble in an alkali, (B) an acid-generating agent, (C) a crosslinking agent and (D) a solvent, wherein the alicyclic resin soluble in an alkali is a ring-opening polymer having an acidic group which is obtained by ring-opening polymerization of a polymerizable monomer comprising an alicyclic olefin monomer having an acidic group in a presence of a catalyst comprising ruthenium, followed by hydrogenating an obtained polymer,

wherein the catalyst comprising ruthenium is a catalyst comprising as a main component an organoruthenium compound in which a neutral electron-donating ligand is coordinated,

wherein said crosslinking agent is a compound capable of forming a crosslinked structure between molecules of the crosslinking agent by heating, [[and]]

wherein the acidic group is a carboxyl group, and

wherein the alicyclic olefin monomer having an acidic group is an alicyclic olefin monomer selected from the group consisting of 8-

hydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 5-

hydroxycarbonylbicyclo[2.2.1]hept-2-ene, 5,6-dihydroxycarbonylbicyclo-[2.2.1]hept-2-ene, 5-  
methyl-5-hydroxycarbonylbicyclo[2.2.1]hept-2-ene, 5-carboxymethyl-5-

hydroxycarbonylbicyclo[2.2.1]hept-2-ene, 8,9-di-

hydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 8-methyl-8-

hydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 8-methyl-8,9-

dihydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 8-carboxy- methyl-8-

hydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 11-

hydroxycarbonylhexacyclo[6.6.1.1<sup>3,6</sup>.1<sup>10,13</sup>.0<sup>2,7</sup>.0<sup>9,14</sup>]heptadeca-4-ene, 11,12-

dihydroxycarbonylhexacyclo[6.6.1.1<sup>3,6</sup>.1<sup>10,13</sup>.0<sup>2,7</sup>.0<sup>9,14</sup>]heptadeca-4-ene, 11-methyl-11-

hydroxycarbonylhexacyclo[6.6.1.1<sup>3,6</sup>.1<sup>10,13</sup>.0<sup>2,7</sup>.0<sup>9,14</sup>]- heptadeca-4-ene and 11-

carboxymethyl-11-hydroxycarbonylhexacyclo-[6.6.1.1<sup>3,6</sup>.1<sup>10,13</sup>.0<sup>2,7</sup>.0<sup>9,14</sup>]heptadeca-4-ene.

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Previously presented) A radiation sensitive resin composition according to Claim 1, wherein the neutral electron-donating ligand is a heterocyclic carbene compound having nitrogen atom.

6. (Original) A radiation sensitive resin composition according to Claim 1, wherein the polymerizable monomer further comprises an alicyclic olefin monomer in which a group having an aromatic group and an aprotic polar group are bonded.

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Previously Presented) A process for forming a positive pattern resin film on a substrate which comprises laminating a resin film comprising a radiation sensitive resin composition which comprises (A) an alicyclic olefin resin soluble in an alkali, (B) an acid-generating agent, (C) a crosslinking agent and (D) a solvent, wherein the alicyclic resin soluble in an alkali is a ring-opening polymer having an acidic group which is obtained by ring-opening polymerization of a polymerizable monomer comprising an alicyclic olefin monomer having an acidic group in a presence of a catalyst comprising ruthenium, followed by hydrogenating an obtained polymer to the substrate, irradiating said resin film with an active radiation to form a latent positive pattern in the resin film and developing the pattern by bringing the resin film having the latent pattern into contact with a developing solution to obtain a developed pattern, and post-baking by heating

to cure the obtained pattern,

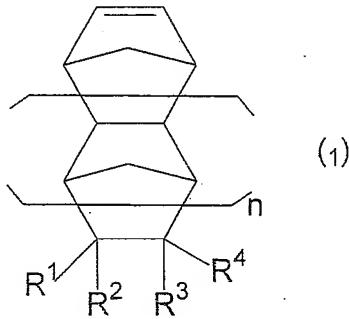
wherein the catalyst comprising ruthenium is a catalyst comprising as a main component an organoruthenium compound in which a neutral electron-donating ligand is coordinated,

wherein said crosslinking agent is a compound capable of forming a crosslinked structure between molecules of the crosslinking agent by heating, and

wherein the acidic group is a carboxyl group.

11. (Canceled)

12. (Previously presented) A process according to Claim 10, wherein the alicyclic olefin monomer having an acidic group is an alicyclic olefin monomer represented by following formula (1):



wherein R<sup>1</sup> to R<sup>4</sup> each independently represent hydrogen atom or a group represented by -X<sub>m</sub>-R', X representing a divalent group, m representing 0 or 1, and R' representing an alkyl group having 1 to 7 carbon atoms which may have substituents, an aromatic group or an acidic group; at least one of R<sup>1</sup> to R<sup>4</sup> represents a group represented by -X<sub>m</sub>-R' in which R' represents a carboxyl group; and n represents an integer of 0 to 2.

13. (Canceled)

14. (Previously presented) A process according to Claim 10, wherein the neutral electron-donating ligand is a heterocyclic carbene compound having nitrogen atom.

15. (Previously presented) A process according to Claim 10, wherein the polymerizable monomer further comprises an alicyclic olefin monomer in which a group having an aromatic group and an aprotic polar group are bonded.

16. (Previously presented) A radiation sensitive resin composition according to Claim 1, wherein the acid-generating agent is capable of providing a positive pattern.

17. (Previously presented) A radiation sensitive resin composition according to Claim 16, wherein the acid-generating agent capable of providing a positive pattern is a quinonediazidesulfonic acid ester obtained from a quinonediazidesulfonic acid halide and a phenol having at least one phenolic hydroxyl group.

18. (Previously presented) A radiation sensitive resin composition according to Claim 17, wherein the quinonediazidesulfonic acid halide is 1,2-naphthoquinone- diazide-5-sulfonic acid chloride.

19. (Previously presented) A radiation sensitive resin composition according to Claim 18, wherein the phenol is selected from the group consisting of 2,3,4-trihydroxy- benzophenone, 2,3,4,4'-tetrahydroxybenzophenone, 2-bis(4-hydroxy- phenyl)propane, tris(4-hydroxyphenyl)methane, 1,1,1-tris(4-hydroxy-3- methylphenyl)ethane, 1,1,2,2-tetrakis(4-hydroxyphenyl)ethane, 1,1,3-tris- (2,5-dimethyl-4-hydroxyphenyl)-3-phenylpropane, an oligomer of novolak resins and an oligomer obtained by copolymerization of phenols and dicyclopentadiene.

20. (Previously presented) A process for forming a resin pattern film according to Claim 10, wherein the acid-generating agent is capable of providing a positive pattern.

21 (Previously presented) A process for forming a resin pattern film according to Claim 20, wherein the acid-generating agent capable of providing a positive pattern is a quinonediazidesulfonic acid ester obtained from a quinonediazidesulfonic acid halide and a phenol having at least one phenolic hydroxyl group.

22. (Previously presented) A process for forming a resin pattern film according to Claim 21, wherein the quinonediazidesulfonic acid halide is 1,2-naphthoquinone- diazide-5-sulfonic acid chloride.

23. (Previously presented) A process for forming a resin pattern film according to Claim 22, wherein the phenol is selected from the group consisting of 2,3,4-trihydroxy- benzophenone, 2,3,4,4'-tetrahydroxybenzophenone, 2-bis(4-hydroxy- phenyl)propane, tris(4-hydroxyphenyl)methane, 1,1,1-tris(4-hydroxy-3- methylphenyl)ethane, 1,1,2,2-tetrakis(4-hydroxyphenyl)ethane, 1,1,3-tris- (2,5-dimethyl-4-hydroxyphenyl)-3-phenylpropane, an oligomer of novolak resins and an oligomer obtained by copolymerization of phenols and dicyclopentadiene.

24. (Currently amended) A resin film of a positive pattern which is formed of a radiation sensitive resin composition which comprises (A) an alicyclic olefin resin soluble in an alkali, (B) an acid-generating agent, (C) a crosslinking agent and (D) a solvent, wherein the alicyclic resin soluble in an alkali is a ring-opening polymer having an acidic group which is obtained by ring-opening polymerization of a polymerizable monomer comprising an alicyclic olefin monomer having an acidic group in a presence of a catalyst comprising ruthenium, followed by hydrogenating an obtained polymer,

wherein the catalyst comprising ruthenium is a catalyst comprising as a main component an organoruthenium compound in which a neutral electron-donating ligand is coordinated,

wherein said crosslinking agent is a compound capable of forming a crosslinked structure between molecules of the crosslinking agent by heating, and

wherein said resin film formed of said resin composition is cured by heating (post baking) after the positive pattern of the resin film is developed, [[and]]

wherein the acidic group is a carboxyl group, and

wherein the alicyclic olefin monomer having an acidic group is an alicyclic olefin monomer selected from the group consisting of 8-

hydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 5-

hydroxycarbonylbicyclo[2.2.1]hept-2-ene, 5,6-dihydroxycarbonylbicyclo- [2.2.1]hept-2-ene, 5-

methyl-5-hydroxycarbonylbicyclo[2.2.1]hept-2-ene, 5-carboxymethyl-5-  
hydroxycarbonylbicyclo[2.2.1]hept-2-ene, 8,9-di-  
hydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 8-methyl-8-  
hydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 8-methyl-8,9-  
dihydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 8-carboxy- methyl-8-  
hydroxycarbonyltetracyclo[4.4.0.1<sup>2,5</sup>.1<sup>7,10</sup>]dodeca-3-ene, 11-  
hydroxycarbonylhexacyclo[6.6.1.1<sup>3,6</sup>.1<sup>10,13</sup>.0<sup>2,7</sup>.0<sup>9,14</sup>]heptadeca-4-ene, 11,12-  
dihydroxycarbonylhexacyclo[6.6.1.1<sup>3,6</sup>.1<sup>10,13</sup>.0<sup>2,7</sup>.0<sup>9,14</sup>]heptadeca-4-ene, 11-methyl-11-  
hydroxycarbonylhexacyclo[6.6.1.1<sup>3,6</sup>.1<sup>10,13</sup>.0<sup>2,7</sup>.0<sup>9,14</sup>]- heptadeca-4-ene and 11-  
carboxymethyl-11-hydroxycarbonylhexacyclo- [6.6.1.1<sup>3,6</sup>.1<sup>10,13</sup>.0<sup>2,7</sup>.0<sup>9,14</sup>]heptadeca-4-ene.

25. (Previously presented) A radiation sensitive resin composition according to Claim 1, wherein (C) the crosslinking agent is a compound capable of forming a crosslinked structure between molecules of the crosslinking agent by heating which is selected from the group consisting of an aliphatic polyamine which is hexamethylenediamine; an aromatic polyamine selected from the group consisting of 4,4'-diaminodiphenyl ether and diaminodiphenyl sulfone; an azide compound selected from the group consisting of 2,6-bis(4'-azidobenzal)cyclohexanone and 4,4'-diazidodiphenyl sulfone; a polyamide selected from the group consisting of nylon, polyhexamethylenediamine terephthalamide and polyhexamethylene isophthalamide; a melamine selected from N,N,N',N',N'',N'''-(hexaalkoxy methyl)melamines; a glycol uryl selected from N,N',N'',N'''-(tetraalkoxymethyl)glycol uryls; an acrylate compound selected from the group consisting of ethylene glycol di(meth)acrylate and an epoxyacrylate resin; an isocyanate compound selected from the group consisting of a hexamethylene diisocyanate polyisocyanate, an isophorone diisocyanate polyisocyanate, a tolylene diisocyanate polyisocyanate; a hydrogenated diphenylmethane diisocyanate polyisocyanate; 1,4-di(hydroxymethyl)cyclohexane; 1,4-di(hydroxymethyl)norbornane; 1,3,4-

trihydroxycyclohexane; and an epoxy compound and a resin having an alicyclic structure.

26. (Canceled)